undergoing PCI in a large regional multicenter database

Methods. Clinical procedural and outcome data were prospectively collected between July 1997 and June 2001 from 19,142 PCI in a consortium of 8 hospitals in Michigan. BMI was divided in 5 categories; 1) <20 (underweight), 2) 20-25 (normal), 3) 25-30 (overweight); 4) 30-40 (obese) and 5) >40 (morbidly obese).

Results. Of 18,778 patients for whom complete weight and height data were available, 2.1% were classified as underweight, 36% as obese and 5.2% as morbidly obese. Underweight patients were older and had a higher percentage of women when compared to the general population ($p<0.05$), while obese patients were younger. Underweight status was associated with a higher incidence of transfusion, contrast nephropathy, emergency CABG and in-hospital mortality (all $p<0.05$). After adjustment for comorbidities, underweight status was an independent predictor of in-hospital death ($p<0.05$).

Variable (%)	BMI <20	BMI 20-25	BMI 25-30	BMI 30-40	BMI>40
Age (years)	68.6±12.06	66.6±12.5	63.5±11.9	60.9±11.1	57.2±10.6
Female sex	60	37.5	27.3	32.4	51.5
Peripheral vascular disease	18.4	12.9	9.9	8.7	8.8
Diabetes	18.4	16.8	22.0	33.6	50.4
Creatinine >2 mg/dl	8.5	5.3	3.3	2.9	4.2
Transfusion	11.0	6.6	4.4	3.4	4.0
Vascular Complications	3.1	2.4	1.97	2.03	2.05
Contrast nephropathy	2.8	1.6	1.0	0.9	1.2
Emergency CABG	1.8	0.85	0.78	0.80	0.72
In-Hospital death	4.1	2.2	1.5	1.13	1.5

Conclusion. Patients with low BMI are at increased risk of fatal and non-fatal complications following PCIs.

1073-166 Predictors of Length of Hospital Stay After Contemporary Coronary Stenting

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Background: Post-procedure length of stay (LOS) is an important determinant of medical costs following coronary stenting. Thus, identification of variables related to LOS may be important for quality improvement and cost reduction efforts.

Methods: We evaluated 19,142 patients who underwent contemporary coronary stenting in a consortium of 8 hospitals. Predictors of log-transformed LOS were identified using multiple linear regression (MLR) modeling. Variables evaluated in sequence included pre-, intra- and post-procedure factors, and adverse outcomes.

Results: In this large dataset, pre-procedure factors alone explained 20% of variability in post-procedure LOS (adjusted r square=0.197). The addition of procedural variables added little to the model (adjusted r square=0.22), while in the final model, addition of outcome variables further increased the overall predictive capacity (adjusted r square=0.29). Female gender, advanced age, CHF, acute MI, cardiogenic shock, diabetes, emergent or urgent procedure, dialysis dependent renal failure, history of cardiac arrest, low ejection fraction and valvular heart disease were baseline independent clinical correlates of LOS (all $p<0.05$), while administration of pre and post procedure heparin, of post procedure low molecular weight heparin, use of Glycoprotein IIb/IIIa receptor blockers, and use of intraaortic balloon pumps were care-process variables related to longer LOS (all $p < 0.001$). Vascular complication, unplanned CABG, blood transfusion, repeat procedures, contrast nephropathy, arrhythmias, post procedure stroke and MI were additional outcome variables associated with increased LOS (all $p\leq0.01$).

Conclusion: 1) Baseline clinical characteristics are important correlates of LOS following coronary stenting 2) The identification of process of care variables and complications associated with increased LOS highlights important targets for quality improvement and cost reduction efforts.

1073-167 Effect of Tirofiban Versus Abciximab on Six-Month Hospitalization Rates for Acute Cardiac Events Among Patients Undergoing Percutaneous Coronary Intervention

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Background: In the TARGET Study, patients received either tirofiban or abciximab during percutaneous coronary revascularization with the intent to perform stent. At 30 days, there were fewer major ischemic events among patients who received abciximab, but the treatment difference diminished and was not significant at 6 months. We assessed whether there were treatment differences in the 6-month hospitalization rate and total bed days for major ischemic events.

Methods: Admission and discharge dates and data on repeat procedures (PCI and CABG) were collected for the initial hospitalization and for each subsequent hospitalization for an acute ischemic event (MI or repeat PCI or CABG) that occurred within 6 months of randomization. The average remaining length of stay for the initial hospitalization following randomization, the number of hospitalizations for acute ischemic events, the total number of bed days and the number of repeat procedures were estimated for the two treatments. Treatment differences and 95% bootstrap confidence intervals were obtained.

Results: Results are shown in the table below. No significant differences were found.

	Abciximab (n=2411)	Tirofiban (n=2398)	Difference (95% CI)
Initial Hospitalization			
Repeat PCI/CABG (per 100 pts)	0.79	0.75	-0.04 (-0.54; 0.42)
Average Length of Stay (days)	1.57	1.60	0.03 (-0.08; 0.15)
6 Month (Post-Discharge)			
Hospitalizations (per 100 pts)	9.42	8.92	-0.50 (-2.24; 1.21)
Repeat PCI/CABG (per 100 pts)	8.63	8.13	-0.49 (-2.40; 1.33)
Total Bed Days (per 100 pts)	34.91	38.11	3.20 (-7.61; 13.89)

Conclusion: At 6 months, there were no significant differences in the rates of hospitalizations or total bed days for acute cardiac events. A 6-month cost analysis that includes both study medication and hospitalizations for acute cardiac events is planned.

1073-168 International Differences in Cost, Medical Resource Utilization, and Clinical Event Rates in a Large Percutaneous Coronary Intervention Study: Results From the EXCITE Trial

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Background: The extent to which international differences in the intensity of medical practice impact on patient outcomes is an important issue. We examined the medical costs and cardiovascular outcomes of 7232 patients undergoing coronary intervention at 412 centers including North and South America and Europe in the EXCITE trial.

Methods: Resources required to treat major cardiovascular events were recorded in the case report forms. Resource use data collected included information about hospital stay, and specific cardiovascular procedures. Costs for these resources were assessed at an individual patient level. Cost estimates for specific resources were collected from cost analysts in each country. Unit cost estimates were converted to U.S. dollars using OECD Purchasing Power Parity (PPP) conversion rates. US costs were estimated by applying national average DRG reimbursements to hospitalizations and assigning costs to individual CPT codes for both outpatient and inpatient procedures.

Results: Costs were greatest in the US. In several countries, the 6 month composite of death and MI was significantly less than in the US, although these data have not been adjusted for differences in baseline risk.

Conclusions: Even within the confines of a multicenter clinical trial, there are significant international differences in resource utilization, medical costs and clinical event rates. These regional differences are likely to have important implications for trial design and sample-size calculations.

Country (n)	Cost ($) [Median (25, 75)]	Death/MI at 6 Months
Chile(61)	3459 (2189, 4626)	3.3%
Mexico (142)	4030 (3279, 6760)	7.8%
United Kingdom (222)	7608 (5683,11960)	4.0%
Germany (350)	7760 (5988, 11866)	2.3%
France (291)	9259 (8725, 17224)	3.8%
United States (2871)	12779 (9681, 22460)	6.6%

1073-169 Practice and Outcome Variations in Percutaneous Coronary Intervention: An Analysis of a Large Multicenter PCI Database

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The objective of our study was to evaluate practice and outcome variation with contemporary percutaneous coronary interventions (PCI) as potential targets for quality improvement.

Methods. Clinical, procedural and outcome data were prospectively collected between July 1997 and June 2001 from 19,142 PCI in a consortium of 8 hospitals in Michigan. Practice and outcome variation among the 8 hospitals were evaluated by calendar year (1998, 1999 and 2000).

Results. Variation in resource utilization and outcomes are listed in the table. Data are expressed as percentage unless otherwise indicated. Numbers indicate average for the collaborative group, and lowest and highest frequencies.

Variable	Year 1998 Low,Average,High	Year 1999 Low,Average,High	Year 2000 Low,Average,High
Pre procedure aspirin	89.4 - 92.4 - 97.2	87.5 - 94.3 - 98.8	75.3 - 90.5 - 98.3
Use of Non Ionic Contrast	17.7 - 68 - 100	29.6 - 78.9 - 100	37.9 - 84.8 - 99.8
Amount of Contrast/case (cc)	202 - 248 - 334	178 - 232 - 295	164 - 222 - 295
Gp IIb/IIIa receptor blocker use	13.4 - 31.3 - 48.4	32.3 - 43.6 - 82.1	49.6 - 61.7 - 91.8
Post procedure heparin use	17.5 - 34.9 - 76.3	11.3 - 38.3 - 61.9	6.6 - 24.6 - 77.7
Contrast nephropathy	0.34 - 0.9 - 2.44	0.11 - 0.52 - 1.55	0.22 - 0.72 - 1.8
Transfusion	3.3 - 4.2 - 9.1	2.24- 4.46 - 6.8	2.24 - 4.7 - 8.61
Vascular Complications	1.36 - 2.14 - 3.15	0.92 - 1.93 - 3.61	0.84 - 1.93 - 3.89
Emergency CABG	0.30 - 1.0 - 1.67	0.16 - 0.64 - 1.44	0.22 - 0.7 - 1.3
Any CABG	0.74 - 1.68 - 2.33	0.78 - 1.36 - 2.51	0.5 - 1.5 - 2.4

Conclusion. 1) Substantial practice and outcome variation exists with contemporary PCI practice. 2) Analysis of this variation identifies potential targets for quality improvement programs in PCIs.